REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated September 11, 2003 (U.S. Patent Office Paper No. 8). In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

As outlined above, claims 1, 2, 3, 4, 6, 7, 12, 13, 19, 24, and 25 are amended to correct formal errors and to more particularly point out and distinctly claim the subject invention.

Formal Objections or Rejections

Claim 25 is objected due to a minor informality. Applicants respectfully submit that they have amended claim 25 according to the Examiner's suggestion. Therefore, the informality of claim 25 has been cured.

Prior Art Rejections

Claims 1 through 4, 6, 7, 9, 10, 12, 25, and 26 were rejected under 35 U.S.C. § 102(e) as being anticipated by Flynn Jr., U.S. Patent No. 6,453,392 (further, Flynn '392).

Applicants respectfully submit that Flynn '392 matured into patent from application serial number 09/189,106 that was made available to the public on publication data June 6, 2002 with publication no. 2002/0069335A1 and issued on September 17, 2002.

The present application claims priority to a Japanese application filed on January 25, 2001. Also, the present application was filed with the USPTO on August 1, 2001. The priority date of the present application antedates the publication date of Flynn '392's precursor application more than one year. Therefore, Flynn '392 derived from a document made available to the public on June 6, 2002 cannot constitute a proper reference under 35 U.S.C. §102 or §103. Based on the above, Applicants respectfully ask the Examiner to withdraw its rejections made using Flynn '392 as the primary reference.

Specifically in response to the 35 U.S.C. §102(b) rejection regarding claims 1 through 4, 6, 7, 9, 10, 12, 25, and 26, Applicants respectfully submit that amended claim 1 recites a storage system wherein the system receives a command to which an ID number for identifying one of a plurality of OSs is attached, derives said ID number, and returns a response that indicates whether to process or reject the access to a logical volume with said

ID number attached thereto, depending on whether the one of the plurality of OSs identified by said command is authorized to access the logical volume, wherein the storage system check's whether the one of the plurality of OSs by said command is authorized or not based on a table which includes authentication information of each of the plurality of the OSs, wherein the storage system receives the authentication information of the plurality of OSs from a computer connected to the storage system by using a control frame and sets the authentication information into the table in advance.

The Examiner alleged in the office action that the disclosure of col. 8, lines 51 to 57, lines 65 to 67 and col. 9, lines 1 to 15 of Flynn '392 anticipates the recitation of claim 1. Applicants respectfully disagree.

The present invention teaches a storage system that possesses a table that includes authentication information. The authentication information includes information about whether each of OSs from the plurality which access the storage system has authentication of use the storage system or not. Figure 18 and the description of Fig. 18 in the specification describe the above. The authentication information is sent and stored in the storage system in advance. The storage system decides whether a command issued by one of the plurality of OSs should be accepted or not. The decision is based on OS's ID included in the command and the authentication information stored in the table. The storage system check's whether the one of the plurality of OSs is authorized access or not based on the table which includes authentication information for each of the plurality of OSs. The storage system receives the authentication information pertaining to the plurality of OSs from a computer connected to the storage system by using a control frame and sets the authentication information into the table in advance.

The storage system controls access from all of the plurality of OSs without the need for an additional command such as "RESERVE" because it possesses a table that includes authentication information already prepared and stored in the table. The storage system rejects a RESERVE command issued by one of the plurality of OSs if the table has information that one OSs pertaining to the plurality does not have authentication. The storage system accepts some access issued by some of the plurality of OSs if the table has information that one OS has authentication to access.

The '392 patent discloses a storage controller which receives "RESERVE" and "RELEASE" commands from a plurality of OSs. When the storage controller receives a "RESERVE" command from one OS pertaining to the plurality of OSs, the storage controller denies access to all OSs pertaining to the plurality until it receives a "RELEASE" command

from the OS issuing the "RESERVE" command. The storage controller always needs the "RESERVE" command to reject access from all of the plurality of OSs without the OS issuing the "RESERVE" command. The storage controller has authentication information about one of the plurality of OSs while receiving the RESERVE command to receiving the RELEASE command, and this information becomes null after receiving the RELEASE command. If the storage controller does not receive a RESERVE command, the storage controller receives all access from all the OSs pertaining to the plurality.

The Examiner's admitted on page 7 of the Office Action that "Flynn does not specifically teach that the system includes tables in which specification of whether to process or reject the access is retained as recited in the claims." Applicants have amended claim 1 to recite the feature "wherein the storage system check's whether the one of the plurality of OSs by said command is authorized or not based on a table which includes authentication information of each of the plurality of the OSs,". Therefore claim 1 recites a feature not anticipated by Flynn '392. Claim 1 is allowable over the reference at least for the reason discussed above.

Claims 2, 3, 4, 5, and 6 depend from and add features to allowable claim 1. Therefore, they are also allowable at least for the reasons discussed in connection with claim 1.

Amended claim 7 recites a virtual private volume control method, wherein servers on which a plurality of OS run communicate with disk apparatus, said disk apparatus including tables in which specification of whether to process or reject the access requested by said command, dependent on said OS's ID number, in such manner that, when one of said OSs on a server issues an access command, said server assigns an ID number for identifying the OS and sends the command with the assigned ID number attached thereto. The disk apparatus receives the sent command, derives said ID number, and returns a response that indicates whether to process or reject the access to a logical volume with said ID number attached thereto, depending whether the one of the plurality of OSs identified by said derived ID is authorized to access the logical volume and said server receives said response.

Applicants have amended claim 7 to recite a feature not disclosed, taught or suggested by Flynn '392, namely the "disk apparatus including tables in which specification of whether to process or reject the access requested by said command, dependent on said OS's ID number." The above feature is recited by claim 11, which was deemed allowable by the Examiner. Therefore, claim 7 is also allowable over Flynn '392 because it does not identically disclose, teach or suggest each and every feature of the claim.

Claims 8 through 11 are also allowable over Flynn '392. They depend from and add features to an allowable claim 7.

With respect to claim 12, a table includes authentication information. The authentication information includes information about each of the plurality of OSs whether they have authorization to use the storage system or not. The authentication information is sent and stored to the storage system (logical volume) in advance so the system can decide whether a command issued by one of the OSs should be accepted or not based on OSs ID number included in the command and the information stored in the table. The Management software recited by claim 12 assigns the ID number included in the command and stored in the table.

The Examiner alleged in the office action that the disclosure of col. 8, lines 51-57, lines 65-67 and col. 9, lines 1 to 15 anticipates the recitation of claim 12. Applicants respectfully disagree and submit that Flynn '392 only discloses "software" in the context of : "Storage controller 108 may include suitable types of hardware and software used in conventional storage controllers. For example, storage controller 108 typically includes a processor having software to perform several required functions, conventional as well as novel functions described herein." Flynn '392 does not disclose, teach or suggest that software manages the access on to the system for the OS and under what circumstances. Therefore, Applicants respectfully submit that the OS management software recited by claim 12 is not anticipated by Flynn '392. Based on the differences outlined above, Applicants respectfully submit that claim 12 is allowable over Flynn '392.

Claims 5, 11, 13 through 19 and 21 to 24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Flynn, Jr., U.S. patent No. 6,453,392 (further, Flynn '392) and Staron *et al.*, U.S. Patent No. 5,483,654 (further, Staron '654). Applicants respectfully traverse the rejection.

Flynn '392 merely discloses a storage controller which receives "RESERVE" and "RELEASE" commands from a plurality of OSs. If the storage controller receives the "RESERVE" command from one of the plurality of OSs, the storage controller denies access from all of the plurality of OSs without the OS issuing the RESERVE command till receiving the RELEASE command from the OS issuing the RESERVE command. It means that the storage controller always needs the RESERVE command to reject the access from all of the plurality of OSs without the OS issuing the RESERVE command. The storage controller has information of authentication of the one of the plurality of OSs while receiving the RESERVE command to receiving the RELEASE command, and this information became

null after receiving the RELEASE command. When the storage controller receives no RESERVE command, the storage controller receives all access from all of the plurality of OSs.

Further, Applicants have reviewed Staron '654 and respectfully submit that this secondary reference does not disclose, teach or suggest a table including information whether each of the plurality of OSs has authentication for using use the storage system or not.
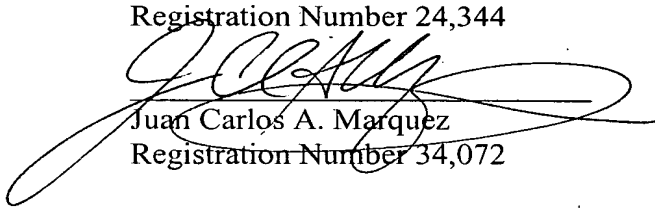
In contrast, the storage system of the invention can control access from all the plurality of OSs without the RESERVE command because of the table which includes the authentication information already prepared. Thus, this combination of references falls short of rendering each and every feature of the present invention as claimed obvious to one of skill in the art.

In view of all the above, Applicant respectfully submits that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more than sufficient that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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